ONNECTICUT COLLEGE
LIBRARY
NEW LONDON, CONN
06320

# THAMES SCIENCE Center naturalist's quarterly

SPRING 1975

# THAMES SCIENCE Center naturalist's quarterly

**SPRING 1975**

CONTENTS

. . . Yon Twelve-Winded Sky
Have You Seen a Butterfly Yet?
The Satellite System
What's In a Name?
The Thames: An Inside Story
Jim Gallagher—Oceanographer
Night Adventure
A Night Walk

Photo Credits: Front Cover, Dutchman's Breeches, Robert O. Joslin; pages 3 and 18, Neild B. Oldham; page 17, Peter Kashanski. Line drawings by Barbara R. Kashanski

Copyright © 1975 by the Thames Science Center, a nonprofit organization seeking a quality environment through education.

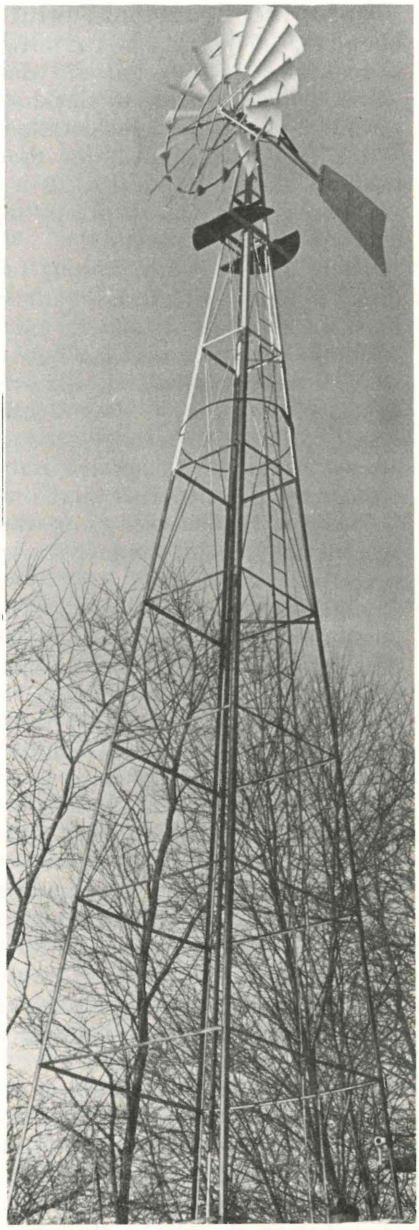
**BOARD OF DIRECTORS**
Mrs. Oakes Ames
Mrs. Robert Bulmer—*Secretary*
Mrs. Donald Charbonnier
Mr. Lewis Cornelius
Mrs. Leo Cross
Mrs. Robert DeSanto
Dr. Marion H. Hamilton
Mr. Franklin Kneedler
Captain Herbert I. Mandel—*Treasurer*
Mr. J. Morgan Miner
Dr. William A. Niering
Mr. David Preston
Dr. Whitman Reynolds
Mr. Ralph A. Sturges III
Mrs. Thaddeus Taraskiewicz
Mr. William Willetts Jr.
Mrs. William Blunt White—*President*

**CONSULTANTS TO THE BOARD**
Mrs. Robert Anderson
Mrs. Louis Darling
Dr. Richard H. Goodwin
Atty. Robert Sussler

EDITOR: Neild B. Oldham

# . . . Yon Twelve-Winded Sky

*by Neild B. Oldham*



We once relied on the wind as a major source of energy. The world's commerce rode the winds. So did the discoverers and settlers of this country. To harness the wind, man has designed beautiful instruments—picturesque windmills and graceful sailing ships. Their utilitarian beauty stems partly from the fact that they represent an harmonious relationship between man and nature. They neither consume the wind nor soil the environment.

Just as wind-driven ships were reaching their peak of efficiency, coal and then oil drove them from the seas with a promise of cheap, efficient, unlimited source of power. In a similar way, the development of electric power systems based upon the availability of cheap coal and oil effectively stopped experimentation with wind generators in this country. When the Rural Electrification Agency pushed the new "cheap" power into remote rural areas in the thirties, the market for wind generators disappeared.

Now, however, as costs soar, both in dollars and in environmental abuse, and the day of depletion moves inexorably closer, oil becomes less and less attractive as the major source of energy. Coal, while it may last longer, will also eventually run out, and its use exacts a cost in pollution that is repugnant. Consequently, interest in wind-driven generators has revived and grows. But what has been done about developing this alternative, non-

polluting and unlimited source of power?

So far the effort has been, well, mostly wind. A lot of talk and a lot of writing, with a few energetic pioneers strongly promoting the use of wind generators by individual homeowners. The lyrical prose written about the advantages of converting one's home to the use of wind-driven generators tends to play down several practical considerations. While their use is ideal for those ideally situated, for most of us it is probably impractical to put up our own wind-driven generators.

There are too many limiting factors. First, to be effective, a windmill must be where hills, trees, or other buildings do not restrict the flow of wind. It must be in an area where the winds blow more or less consistently, or at least strongly enough often enough to generate usable amounts of power. All of these limitations will remain even if or when an efficient, cheap system of storing the power is developed.

Legal restrictions further limit the possibilities in all but rural, sparsely populated areas. In Connecticut, for example, any tower must be situated so that if it fell, it would fall on the owner's land. Since a windmill tower would have to be somewhere near 50 feet high, one could not be put up on most house lots.

Furthermore, many communities today have zoning laws that restrict the height of any structure to 30 or 35 feet in residential areas. Consequently, a person would need to receive approval for a variant use of his land to build a windmill.

Everett Barber of Guilford, the only person in this general area who is known to have sought a permit to erect a windmill for a wind generator, was turned down by the Guilford Zoning Board. The board felt it did not have the power to authorize a variance or exception for such a structure. Barber, who teaches architecture at Yale, is hoping that a proposed amendment to the Guilford zoning laws allowing windmills in residential areas will pass. Barber is building a house using both solar and wind energy not far from Long Island Sound.

A public hearing on the amendment was scheduled for the first week in March. George Karl, planning and zoning officer for Guilford, expects that the amendment will be approved. If so, it will be the first law in the area specifically allowing windmills in a residential area. A special permit will still be required and at least two special criteria must be met: the tower must not exceed 75 feet and it must not produce more than 55 decibels of noise in a 20-mph wind. Other than that, general regulations covering towers will apply.

While visual pollution is often cited as a drawback to wind generation, noise pollution rarely is. Barber says that his windmill, which he purchased from Solar Wind Company in East Holden, Maine, does make a noise, although he finds it a rather restful "whoosh, whoosh" sound. He says the noise would not exceed the 55 decibels in a 20-mph wind.

Guilford is not expecting a rash of applicants seeking permits for windmills, nor are any of the other towns in the area. If a lot of people began putting them up in their front yards, a building inspector in another town observed, complaints about visual pollution would probably increase.

Fred Gale, of Noank, is also experimenting with wind-driven generators. He is in the process of carving a wooden prop to be placed on top of his house, thus eliminating the need to build a tower. Before

installing it, Gale plans to try it out in his front yard. One wooden propellor that he carved was blown to pieces in a 60-mph gust during a winter storm.

If putting up a windmill and generating your own electricity interests you, you can contact some of the companies or read the literature listed at the end of this article. Other steps you should take would include checking with your local zoning board and your building inspector. You will probably need both a building permit and an electrical permit.

You will also need to check the wind conditions. The National Climatic Center, Federal Building, Asheville, N.C. 28801 is the major source of information about wind conditions in your area, although the information supplied might not be as localized as you will need. Other local sources include the Coast Guard, airports, and weather stations. They tend to keep only raw data, however, which you will have to sift through to find what you need.

Barber used wind information gathered at a yacht club near his house. He determined that the average wind velocity was 9 mph in the summer and 15 mph during the winter. Energy winds—those that will generate a substantial amount of power—blow 12 to 14 days a month in the winter and about 10 days a month in the summer. He expects to be able to generate between 150 and 400 kilowatts annually, enough to provide him with 80 percent of his energy needs.

*Large-Scale Efforts*

Wind power offers real promise as a source of energy on a large scale. The basic knowledge exists already; what has been lacking is money to develop the technology for practical, day-to-day operation. For those of us who find putting up our own private windmills impractical, it is heartening to know that the amount of funds being made available to develop large systems is beginning to grow. Private industry has so far not shown any inclination to invest money in such projects. And until three years ago, the amount of federal funds available was zero. But in the last fiscal year, the National Science Foundation received $1½ million to fund projects. In the current fiscal year, the Energy Research and Development Administration—which replaced the National Science Foundation in this area—has $7 million for wind-related research, according to Louis Divone, an ERDA official.

Seven grants have already been awarded to organizations to conduct wind research projects. One is for the development of a generator capable of producing 100 kilowatts outside of St. Louis. Closer to home, Kaman Aerospace of Windsor Locks is designing a project now for which funds have been earmarked. Site of the project and its size are not yet fixed.

Not yet funded by ERDA, however, is any project employing the intriguing ideas of Dr. William E. Heronemus, professor of civil engineering at the University of Massachusetts. He has suggested a string of wind generating units situated just off the New England coast. Eighty-three of these generators on floating buoys out of sight of land could produce 160 billion kilowatt-hours a year.

The U.S. Coast Guard is also experimenting with the use of wind power for its own purposes. No, not just to push the ***Eagle***, but to generate the electricity needed for lights on small, unmanned stations. According to Lt. Ted Colburn at the USCG Research and Development Center at Avery Point, wind

generators might even be used at small manned stations if they prove effective.

Lieutenant Colburn is working on still another alternative source of power—wave energy. He is experimenting with the transformation of wave energy to electricity. A buoy that depends on wave energy to keep its light burning is actually functioning now in Boston Harbor. But that is another story.

For years, farmers have used windmills to pump water. Some of these towers can still be spotted in this area. In fact, such a windmill continues to operate behind the Reynolds Garage on Hamburg Cove in Lyme. Still turning briskly after 65 years and some loving care, this windmill pumps water from a spring-fed well 700 feet up a hill to a 6,000 gallon reservoir. Gary Reynolds, its owner, who recently painted the 40-foot tower and did some major maintenance on its motor and gears, estimates that it would require a one-horsepower motor operating 12 hours a week to do the work the windmill is doing. He keeps it because he likes it, not as an energy saver.

*For Further Information*

Numerous articles and books have been published on using wind as a source of energy. Most are "how to" books aimed at the individual who wants to put up his own wind generating plant. Some, however, discuss the overall potential of using wind power on a big scale. All of them are filled with interesting information. For example, windmills for pumping water have many blades because that provides more power. On the other hand, windmills for generating electricity usually have only two or three blades, because they rotate faster. Which kinds are more stable is still open to debate.

Companies in New England that supply both information and windmills are: Frank W. Garner, 1420 Providence Highway, Norwood, Mass. 02062; Edward A. Larter, Jr., Main St., Dunstable, Mass. 01827; and Solar Wind Company, RFD 2, East Holden, Maine 04429.

Some printed material for your information:

*The Mother Earth News Handbook of Homemade Power*
$1.95 postpaid from:
Bantam Books, Inc.
666 Fifth Ave.
New York, N.Y. 10019
and
Mother Earth News
P.O. Box 70
Hendersonville, N.C. 28739

*Electric Power from the Wind*
$2.00 postpaid from:
Solar Wind Co.
P.O. Box 7
East Holden, Maine 04429

*Wind and Windspinners*
$7.50 postpaid from:
Earthmind
26510 Josel Dr.
Saugus, Cal. 91350

*Power from the Wind*
$9.95 postpaid from:
Van Nostrand-Reinhold Co.
300 Pike St.
Cincinnati, Ohio 45202

*Wind Energy Bibliography*
$3.00 postpaid from:
Windworks
Box 329, Rt. 3
Mukwonago, Wis. 53149

*Windmill Manufacturers*
University of Cambridge
Department of Architecture
Technical Research Division
1 Scroop Terrace
Cambridge CB2 1 PX
England

# Have You Seen a Butterfly Yet?

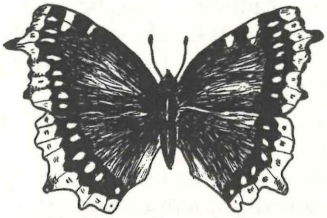
*by Barbara R. Kashanski*

We gain a total of one hour and 21 minutes of daylight in March. The lengthened day and warmer sun trigger many responses among the living things that share this corner of Connecticut with us. Pussy willows, skunk cabbage, and snowdrops respond to the higher temperatures and flower during the first part of the month. Have you seen a butterfly yet? The mourning cloak has been out of hibernation for a couple of weeks by now.

The Connecticut Arboretum in New London is a good place to see this renewal of life. While you're there, take the main trail back towards the ravine and stop by the woodland pool that's to the left of the path shortly after you enter the natural area. You can usually find large jellied masses of spotted salamander eggs here. Please just look. Don't collect! You might also see the smaller jellied eggs of the wood frog in this small dark pool. If

*wood frog*

you're lucky you will hear the guttural croaking of the wood frog from the red maple swamp a short distance away.



Before the end of March your bird houses should be cleaned and up and ready for wood ducks, bluebirds, tree swallows, and house wrens.

Activity increases along our shores as March ends. At Rocky Neck and Harkness State Parks, the ospreys have returned to their old nests and will be busy with repairs and renovations. Let's hope they have another good breeding season. The pair that nest at Harkness have successfully reared their young for the last two years. Reports from other areas, such as the Westport River in Massachusetts, are encouraging and indicate the osprey is making a comeback. Ecologically speaking, it's a healthy sign for man as well as bird.

Barn Island is one of the best areas to go to see returning shore birds. You can find sanderlings, killdeer, piping plovers, greater and lesser yellow legs, snowy egrets and other shorebirds there.

*A Wetter April*

Get out your raincoat and rubber boots! April is usually a wet month and according to the forecast in the Farmer's Almanac it's going to be an inch wetter this year. The norm is

3.5 inches. But don't let that keep you in—much happens outdoors this month. Our woodlands, streams, and ponds are where the action is. Nehantic State Forest in Lyme and the Connecticut Arboretum have good ponds for finding painted and spotted turtles sunning themselves. Tadpoles will be active in shallow waters. These will be the large tadpoles of the bull and green frogs that take more than a year to mature and change into their adult form.

You'll have to look closely to see redbacked salamanders prowling the edges of a stream such as the swift flowing one at Devil's Hopyard in East Haddam. I've had good luck finding crayfish in this stream.

*white trillium*

The Hopyard is also a good place to find early spring flowers. Many trails follow along the stream and wind through the very beautiful woods. If lucky you'll spot hepaticas and the delicate pink blossoms of the rare trailing arbutus. If you visit in the middle of the month, you will find wood anenomes, dwarf ginseng, dutchman's breeches, wild ginger, purple and white trilliums, and columbine blooming.

Those who prefer to enjoy their wild flowers without a lot of walking should visit the Edgerton Wild Flower Garden in the Connecticut Arboretum. Here you will find a good collection of woodland spring

*barn swallow*

flowers. Large masses of marsh marigolds bloom in the swampy area bordering the wildflower garden, as does the early blooming spicebush.

By mid-April the woods will host an increasing number of returning birds: the red-eyed vireo shuffling in the leaves, the 'skunk' bird (black and white warbler) studiously exploring tree branches and trunks, the shy yellow bellied sapsucker. Oven birds and wood thrushes will be back by the month's end.

If you're the unadventurous type who prefers to stay close to home, you need only step out your back door to welcome April's offerings: the friendly phoebe returns early in the month, forsythia brightens the drive, daffodils bloom. The house wren inspects the housing

*tree swallow*

accommodations you've put up, giving long vocal dissertations on what he thinks of them. Much to our dismay, the barn swallows usually choose our garage for their home. It's time also for the purple martins to come back—will they lease the apartments at the Science Center this year?

*Warbler's Month*

Your own yard is a wonderful place to be as April gives way to May—especially if your lawn is full of 'weeds' like the bright yellow dandelions, buttercups, cinquefoil, fuzzy pussy toes, and purple violets. The northern (Baltimore) oriole flashes by about this time and will check out the flowering quince. If you have one of these beautiful thorny shrubs, watch for the returning ruby-throated hummingbird, which is also attracted to the quince's orange-red blossoms.

May is the month of warblers. You'll have to leave your doorstep to see most of the 28 different species that come through this area. Many will stay to nest. The warbler migration occurs from May 10 to the end of the month. Although the Arboretum and Mitchell Woods in New London, Devil's Hopyard, and Barn Island are good areas for birding this month, the prime area for migrating warblers is Assekonk Swamp off of Route 184 in North Stonington.

While you are in that area, swing by the Peace Sanctuary on River Road in Mystic to see the hundreds of pink lady slippers that bloom on the top of the hill. There are usually some rare white ones mixed in with the pink—it's a sight worth seeing! Take your camera. This sanctuary is a fine example of a Connecticut woodland and has a good sampling of the plant and animal life that can be found in such a habitat. As you climb the trail up the hill look for the small white canada mayflower, bellwort and solomon seals. Listen for the shy secretive yellow-bill or black-billed cuckoo.

Cuckoos remind me of gypsy moths because cuckoos are one of the natural enemies of this hairy insect nuisance. Gypsy moth caterpillars start hatching out the first part of May. Don't wait. Take action immediately. If you must spray, use Bt (Bacillus thuringiensis), which is a bacterial insecticide and kills only the gypsy moth caterpillar without harming other organisms. We had very good luck last year with Tanglefoot, which we put around the trunks of the trees near our house. Either product can be purchased in most hardware stores.

Little has been said about what can be found in our fields and thicket areas. First, space limits the coverage of each habitat. Secondly, early

*bellwort*

spring belongs to our woodlands, swamps and ponds. But by May the weather is settling down and the exposed areas of fields and meadows are more hospitable to plant and animal life. Haley Farm and Bluff Point in Groton offer wonderful open areas to roam through. Meadowlarks, kingbirds, catbirds, brown thrashers, prairie and blue-wing warblers, field and song sparrows, woodcock and whip-poor-wills in the evening are just a few of the species you'll find in these locations by the end of May. There will now be 14 hours and 58 minutes of daylight—don't miss a second of it!

# The Satellite System

*by Robert O. Joslin*

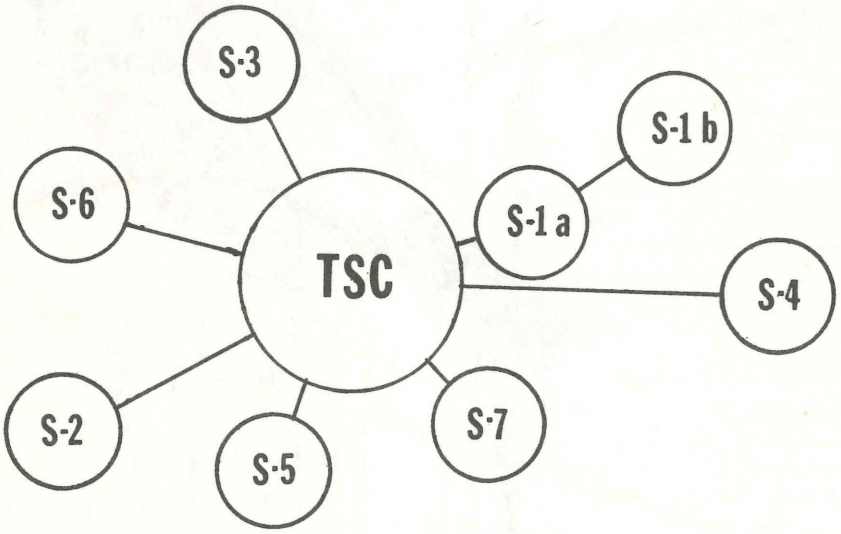
The Thames Science Center, although a private nonprofit institution, rests upon the property of Connecticut College. Through a rather unusual, long-term agreement, the Center has the privilege to use the adjacent land and arboretum in its environmental education program. Thus, in essence, the Thames Science Center is a landless organization. We exist as one institution utilizing the land of another. At first appearance, lack of land ownership might be considered a handicap, but in reality, it is not. This mutual arrangement provides for cooperative programs between the two institutions and reduces the high cost of maintaining properties by the Thames Science Center. Does the possibility exist for similar arrangements with other landholders in outlying communities? Would it be possible to receive both *land use* and *local funds* for the operation of environmental education programs by the Thames Science Center?

Open land areas exist in various communities under the jurisdiction of the Nature Conservancy, land trusts, private owners, etc. The potential exists for the Center to aid in a land use environmental education program for these lands, cooperating with local groups and organizations such as garden clubs. Many of these organizations are actively seeking programs to educate the public about ecological needs and about benefits the community derives from land conservation. Local interest creates local funds for use of the land in an environmental education program. In this way, these properties can become "satellites" of the Thames Science Center. In time, one or more of these "satellite learning centers" might warrant the services of a teacher-naturalist. It would then be the responsibility of the Center to hire additional personnel as the satellite system grows. With the demand for quality environmental education programs, this *self-supporting* system would be a perfect avenue for future growth of the Thames Science Center as we are a low budget, landless organization.

The gradual establishment of the satellite system would be beneficial to the communities and to the Thames Science Center in the following ways:

1. *Self-supporting*—the funds required to operate the satellite system would come directly from the local communities; no additional costs would be required from the budget of the Center.
2. *Added staff*—the funds from the support of satellite stations would be used to hire additional staff to operate them. One teacher-naturalist could service more than one station. Staff would increase as added stations and funds became available.
3. *Spectrum of habitats*—the variety of localities of the stations would give the Center a diversity of habitats in which to create programs. The stations would be representative samples of the ecological communities of our region.
4. *Total community involvement*—a sense of home pride would occur through local efforts and funding. Environmental education programs with local support survive!
5. *Public relations*—quality environmental education programs at satellite stations would win local attention and support. The net results would bring increased membership and wide support for the total program of the Thames Science Center.
6. *Fuel conservation*—programs, for the most part, would remain at the satellite station in the community. There would be little need to bus people long distances.

The satellite system concept presents both an opportunity and challenge. With its success, we will have opened the doors to a whole new area in the growth of the Thames Science Center.




THE SATELLITE SYSTEM

carroll

# What's In a Name?

*article and drawing*
*by Allen Carroll*

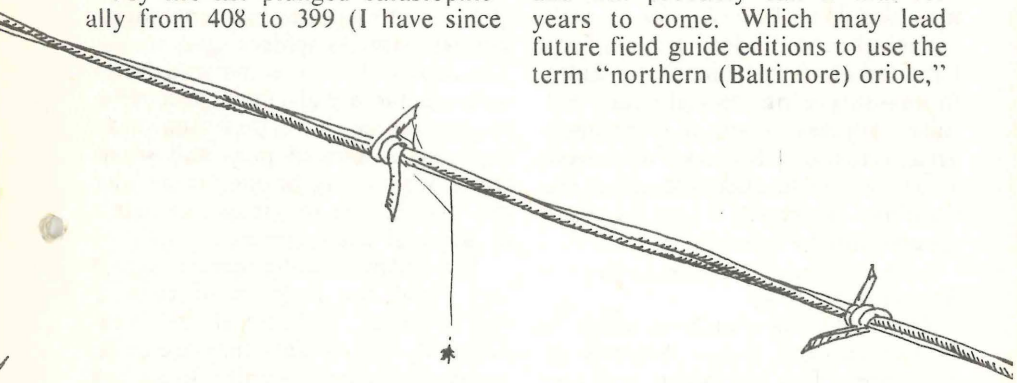
In mid-1973 a disaster occurred. It affected thousands of people all over North America, yet was not given major coverage in the news media. The disaster robbed many of a certain degree of status; it left others disappointed, shocked, even angry. It was perpetrated by an elite coterie of specialists, backed by the scientific community and Nature herself.

The disaster took the form of a terse article in *The Auk,* the journal of the American Ornithologists' Union (AOU). The article spelled doom for about 13 entries in the official checklist of North American birds, and slashed eight cards from the file that is my "life list"—a compilation of every species of bird I have observed in the wild. What the AOU had done was to update its universally-used checklist, reducing to subspecies status several birds that had formerly been regarded as species. And, in three cases, the AOU had elevated subspecies to species.

My life list plunged catastophically from 408 to 399 (I have since managed—barely—to push it back over the 400 mark). Countless birders were similarly affected; indeed, some were so disturbed by the matter that they vowed to compile their own "official" checklist in defiance of the AOU. The reaction of most birdwatchers, myself included, was more moderate. We came to realize that our life lists wouldn't mean anything if they weren't accurate, and that presumably the AOU had made its changes on the basis of sound scientific findings.

*No More Baltimores*

The case of the Baltimore oriole tends to confirm that presumption. One of the AOU's rulings was that the Baltimore and Bullock's orioles (the latter is a Western bird) were not separate species, but races of the same species. So the two were grouped under the name of northern oriole. The only problem is that every easterner knows the new northern oriole as the old Baltimore, and will probably call it that for years to come. Which may lead future field guide editions to use the term "northern (Baltimore) oriole,"



while the bird is popularly referred to as Baltimore (northern) oriole.

Whatever they are called, the Baltimore and Bullock's orioles are undoubtedly the same species. As far back as 1938, it was well known in ornithological circles that the birds probably interbred where their ranges overlap. In that year, George Miksch Sutton reported a number of "oddly plumaged orioles from western Oklahoma" in an article in *The Auk*. Accompanying the article was a color plate showing a Baltimore, a Bullock's, and four apparent hybrids that formed a perfect transition in markings from one to the other.

The author was too cautious to say that the birds were indeed interbreeding, but the evidence was there. He noted that the songs of the orioles in the area of study were a hybrid of the Bullock's and Baltimore's songs. He also pointed out that "in parts of the same area the indigo bunting and the lazuli bunting were actually found to be interbreeding." This, I suppose, implies that loose behavior was so rampant in the area that the orioles were bound to be participating.

Although the Baltimore is a familiar sight in New England, its relative, the Bullock's, is rarely seen here. The only sighting I know of occurred during Old Lyme's Christmas bird count in 1972. The count's organizer and leader, Roger Tory Peterson, had just spotted a Baltimore—surprising enough for that time of year—when, to everyone's great surprise, a Bullock's appeared. Those were the good old days: the sighting increased Old Lyme's species tally by one.

*Stay is Busy, Brief*

Normally, the northern oriole is in Central and South America in December. The first males arrive in New England in early May, usually just after the apple trees bloom. The females arrive two or three days later, and after being subjected to a courtship involving much singing and posturing and showing off, the female begins work on her nest. The male helps only occasionally, spending most of his time advertising his presence with flashy plumage and a marvellously sonorous and flute-like song.

The nest, usually in the form of a deep hanging cup, is one of the most sophisticated of any in North America. Starting with a few strips of weavable material, including plant fibers, string, horsehair, and bits of cloth, the female assembles an amorphous, tangled mass hanging from a branch 25 to 30 feet above the ground. (The nest may be placed as high as 60 feet and as low as six, and is usually located in a large tree bordering an orchard or old field.) With rapid movements of her beak, the female assembles a loose framework, incorporating the original mass into the structure. Once the nest cavity has been formed, the bird enters the nest and shakes violently to further mold the pocket. The nest is completed with the addition of a soft lining.

Four to six eggs are laid, and the young hatch in about two weeks. They are fed caterpillars (including gypsy moth larvae and tent caterpillars), insects, spiders, and snails. The adults also eat some wild fruits and vegetable galls, and, according to one source, have been known to consume cultivated peas and small fruits, which may be one reason why the strawberries in our garden didn't do too well last summer.

The northern oriole remains active and vocal for little more than a month after its arrival in New England. By mid-July they are quite scarce, although small flocks of

juveniles may be spotted now and then.

*AOU's Leisurely Pace*

To get back to the Baltimore-Bullock's question, it is now known that the two races interbreed along a 100-mile-wide band stretching north and south across the central great plains. A 1964 article by Charles Sibley and Lester Short claimed that hybrids collected on the eastern side of the area of overlap showed a tendency toward the Baltimore's markings, while those on the western half more closely resembled the Bullock's. They hypothesized that the eastern and western populations had been isolated from each other by glaciers during the last ice age, and that they were reunited before their evolution into two separate species was complete.

For decades, ornithologists have known that what we laymen had assumed were two species were actually only races of the same species. Yet it was only last year that this knowledge was revealed to us by the AOU. If there are any grounds for argument with the recent changes in the official checklist, it is that the AOU has been a bit too leisurely in going about its work.

*Summary of Changes*

The following is a summary of other changes in the AOU checklist that may concern Connecticut birders:

The slate-colored junco is now the dark-eyed junco, a new grouping of the familiar eastern bird with three western races, the Oregon, white-winged, and Guadeloupe juncos.

The myrtle warbler has unfortunately been renamed yellow-rumped as a result of the discovery that the Audubon's warbler of the west is merely a subspecies.

The blue goose has been designated a subspecies of the snow goose.

The common teal, which rarely visits North America, is a subspecies of the green-winged teal.

The yellow-shafted flicker joins its western relatives (red-shafted and gilded) to become the common flicker.

And the rare Ipswich sparrow is now only a race for the far more common savannah sparrow.

Nine eastern birds have been renamed; these are listed below with the old names on the left and new on the right.

| | |
|---|---|
| parula warbler | northern parula warbler |
| pigeon hawk | merlin |
| sparrow hawk | American kestrel |
| common egret | great egret |
| American widgeon | American wigeon |
| knot | red knot |
| catbird | gray catbird |
| common scoter | black scoter |
| upland plover | upland sandpiper |

The three "new" species are the Thayer's gull, a bird of the far north formerly considered a subspecies of the herring gull; the willow flycatcher, identical in appearance but not song to the alder (formerly Traill's) flycatcher; and the great-tailed grackle, a southwestern relative of the southeastern boat-tailed grackle.

You can pick up revised checklists in the Science Center gift shop!

# The Thames: An Inside Story

*by "Red" Lobster*
*as told to Jim Gallagher*

Permit me to introduce myself. My friends call me "Red" Lobster, but the girls call me "fresh." I recently received a request to provide an insider's view of the Thames River. To some of you the Thames (rhymes with James) is just a body of water that separates New London from Groton. As a long term resident, and conservation constable, of this arm of Long Island Sound, I appreciate this opportunity to give my insider's view of the Thames.

First, let me set the record straight. The Thames is not really a river; it is an estuary. That is, it is a salt water inlet whose structure is modified by fresh water inflow from its tributaries. You may be interested to know that this estuary is the dumping ground for fresh water from about 1,473 square miles of land, encompassing eastern Connecticut, south central Massachusetts, and western Rhode Island. Most of this fresh water is carried into the Thames at Norwich by the Quinebaug-Shetucket river complex and the Yantic River; the remainder enters the Thames as ground water runoff and via local streams. The volume of fresh water inflow, however, is small compared to the volume of salt water in the estuary. The volume of water discharged from the estuary into Long Island Sound is about one-eighth that from the Connecticut River.

My job as conservation constable takes me all over the estuary, which is about 16 miles long and varies in width from about 1.5 miles at the mouth to about 500 feet at Norwich. It's too large an area for one man, I mean lobster, to enforce, and I keep asking for more state money to hire an assistant, but it's not in the budget. I was really embarrassed the day one of your "boating enthusiasts" tossed a beer can into my living room. The state's water quality classification of the Thames is SB, which means that the water is not safe for swimming (for humans, that is), nor for recreational shellfishing. (Our lobby in Hartford had nothing to do with that decision.)

Before I tell you how some of my relatives and friends live down here, let me tell you something about our atmosphere and climate. As humans are sensitive to changes in weather, we are also sensitive to changes in the atmosphere, which is really your hydrosphere.

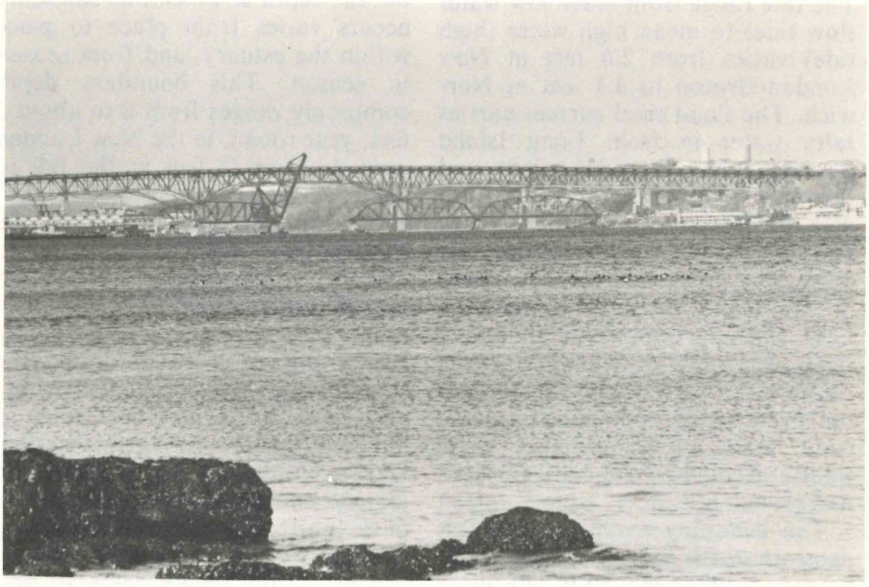
The vertical rise and fall of the water level is called the tide, and the corresponding horizontal motion of the water is called the tidal current.

The tide range from mean low water (low tide) to mean high water (high tide) varies from 2.6 feet at New London-Groton to 3.1 feet at Norwich. The flood tidal current carries salty water in from Long Island Sound to raise the tidal height, and the ebb tidal current carries fresh and salt water out of the estuary and into the Sound to lower the tide level. The mean tidal current speed in the channel varies from about 0.2 knot near the mouth to about 0.7 knot just south of Norwich. While we have to contend with this in-and-out cycle twice each lunar day, we can't really complain since these tidal movements bring us fresh food and clean our "air."

The incoming fresh water is less dense than the salty sea water, and it tends to flow above the salt water layer. Therefore, a two layer structure exists which serves to establish a natural boundary for our movements. Generally, less saline (0-10 parts per thousand) water overlies the saltier bottom water (10-31 parts per thousand) for most of the year, but the depth at which this boundary occurs varies from place to place within the estuary, and from season to season. This boundary depth commonly ranges from 0 to about 3 feet, year round, in the New London area, to from 2 feet in the fall to about 20 feet in spring at Norwich. Little rainfall occurs during the summer, allowing the salt water to extend to its observed maximum inland penetration of about two miles past Norwich. Most of us remain below Norwich during the summer, however, because the oxygen level in the bottom water is dangerously low during this period. During the spring, melting of land ice and snow and increased rainfall push the fresh-water-only boundary south of Norwich.

The water temperatures also change with the seasons. Increased solar heating of the surface waters in the summer intensifies the thermal boundary between the two layers.

The maximum summer temperatures of the upper and lower layers



are about 26°C and 18°C, respectively. To complicate things further the shallow bottom waters at the shore may also differ from the bottom waters in the channel by about 10°C in the same afternoon. In winter the reduced air temperatures and stronger winds tend to stir up the river, and mix the fresh and salt water layers. The differences in surface and bottom water temperatures are reduced to about 2°C. Ice tends to form at the water surface in upper reaches of the estuary during extended cold periods, but rarely does ice form in the lower sector. In late spring the fresh water is warmer than the colder Long Island Sound water, and the reverse is generally true in the late fall. So you can see that we year-round marine residents of the estuary must be mindful of these daily and seasonal variations when we go out food shopping; our lives depend upon it.

The seasons always bring changes in number and type of residents in our community. We have our summer residents—that select group who travel to warmer climates for the winter. From spring through fall the estuary is a rich spawning and nursery area where larvae, fry, spat, and fingerlings abound. As with most nurseries, it's too noisy and hectic for an old confirmed bachelor like myself. Fin fish are plentiful such as winter flounder, white perch, smelt, tom cod, bluefish, striped bass, alewife, porgy, weakfish, cunner, hake, eels and smaller baitfish such as mummichog and silversides. The crime rate here increases in the summer when bluefish and striped bass go on rampages and eat everyone in sight.

Among my fellow invertebrates in the estuary are mobile forms such as blue and rock crabs, shrimp, worms, starfish, snails, and, of course, the stately lobsters. Sessile and burrowing forms are also abundant, such as clams, oysters, hydroids, anemones, barnacles, and mussels. Mammals are occasionally

represented when harbor seals find their way into the estuary in the winter.

One of my favorite local characters over the years was a shy old salt named Sessile B. Quahog; he always wanted to be a movie producer but disliked starfish. One day he slipped his mooring off Horton Cove. Since there is a net inflow of bottom water from the Sound and a net outflow of surface water, an object may be carried back and forth in the estuary for many tidal cycles, for periods of as much as a week, before being flushed out into Long Island Sound. We bade farewell to each other twelve times during his oscillatory journey seaward.

Well, I must don my conservation constable hat again. I received a complaint from a family of mussels upstream that another beer can was tossed into their bed.

The editors of the Thames Science Center Naturalist's Quarterly express their appreciation to Lou Bonamarte, well-known local artist, for refurbishing our familiar symbol, the great horned owl. He also designed our new name plate. Mr. Bonamarte, a watercolorist and winner of numerous awards, has had showings in various cities around the country.

We hope our readers will be as pleased with our new image as we are.

# Jim Gallagher —Oceanographer

The man who conducted the tongue-in-cheek interview of a lobster in the Thames River has been studying rivers, oceans, and other bodies of water just about all of his working life, and even though the interview technique was tongue-in-cheek, you can be sure the facts contained are straight.

James J. Gallagher has been a civilian oceanographer at the Navy Underwater Systems Center in New London for the past twelve years. Prior to that he spent two years with the Navy Oceanography Office at Washington, D.C. About the only interlude from ocean research was a stretch with the U.S. Air Force.

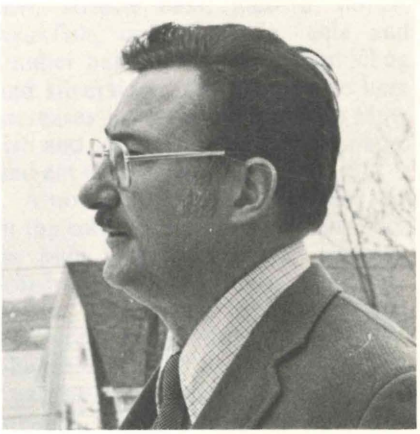
Jim maintains an active, full life, most of it centered around the subject of his work. A person interested in ecology, environmental concerns, alternative sources of energy and what might be going on locally or nationally in these fields would do well to start with Jim, who is usually well informed on these matters. For several years he has been the local chairman of the Southern New England Section of the Marine Technology Society (SNEMTS). He has worked on such projects as one-day seminars concerning marine technology and on efforts to establish a major oceanography center in the southeastern Connecticut area.

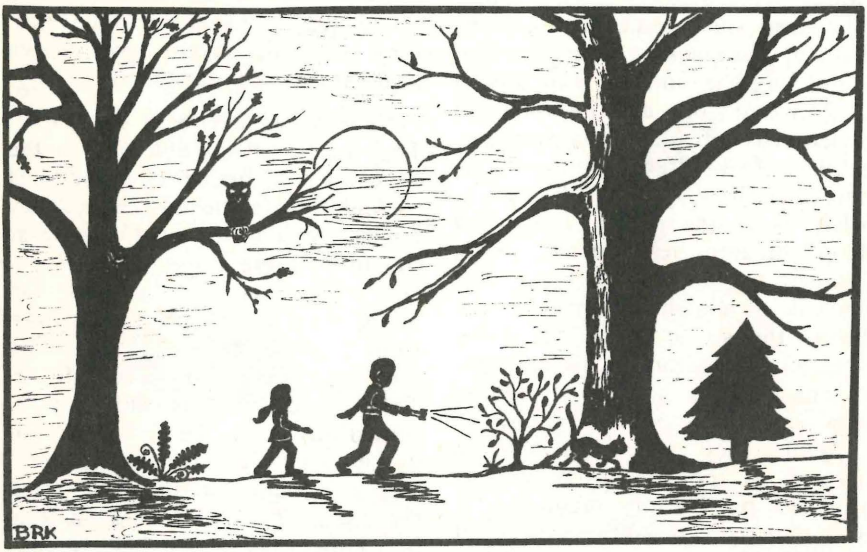
He has also been concerned with studies of Long Island Sound. He was instrumental in obtaining permission from the Navy to put two NOMAD buoys in Long Island Sound. The NOMADS are loaded with equipment to obtain statistical information about weather and water conditions. Unfortunately one of the buoys lost most of its equipment when a barge struck it. The other is still functioning.

In his work for the Navy Jim has travelled, if not all seven seas, many of them. He has worked in the east and northern Atlantic, the Norwegian Sea, the Caribbean and the Sargasso Sea. His specialty, studying the characteristics of the ocean bottom, has taken him down to depths of 4,000 feet in the Westinghouse Deep Star.

Three nights a week, Jim travels to Avery Point to teach an undergraduate course in geology at the Southeastern Branch of UConn. He also finds time to be a merit badge counsellor for the Pequot Council of the Boy Scouts of America.

In addition to his professional and civic activities, Jim is building a house in East Lyme, in which he is planning to use solar heat. Both he and his wife, Elizabeth, are transplanted New Yorkers (Queens) and neither they, nor their two daughters, Susan, 12, and Deirdre, 8, have any wish to leave this area for the city. "Not for a million," says Jim.






# Night Adventure

*by Eric Leinbach*

Craig and Lisa had stopped searching for their lost cat, Toby. As a matter of fact, they had stopped walking altogether. Craig and Lisa were lost, and they were more than a little bit scared.

When they had started out, there had still been lots of light. Walking in the spring woods was a fun adventure. But now it was getting dark —awfully dark. And they no longer knew just what direction to go to return to the cozy little cabin by the lake and their waiting parents. Craig was ten years old and his sister was only seven. Neither had ever been alone before in a dark woods. Not knowing what to do, they stood close together hugging a small flashlight and peering fearfully out into the darkness.

As their eyes gradually got used to the dark, they found they could see some things without the flashlight. Strange, dark shapes turned out to be nothing more than stumps or rock boulders. And yet it was still spooky. The woods even smelled spooky. There was the smell of rotting wood, of wet dirt, and dank decaying leaves. These are exciting spring smells by daylight, but at night they made Craig and Lisa think of wet dungeons, or mad witches. The cold hum of occasional mosquitos made them all the more miserable. Then suddenly all the noises began.

The first noise was from a distance away. It was a deep croak, and made them both jump. It was answered from close by with a sharp clucking, like a hen or duck. Then a loud, high trill filled the air from the trees all around. And if this was not enough, a chorus of loud peeping joined together to form a sound very much like high pitched sleigh bells. Such a racket!

At first Craig and Lisa were frightened by the many noises, but by carefully using their flashlight

they soon discovered that most noises were simply singing frogs. The deep voice came from a large bullfrog, the clucking from a masked wood frog, the loud trill from dozens of grey tree frogs, and the sounds of sleigh bells came from the combined piping of hundreds of tiny, tiny spring peepers. As they found out what made the noises, Craig and Lisa became less afraid. They listened to the crickets chirp, the squawk of a night heron, and even heard the sound of a shy flying squirrel scampering in the branches overhead. They had never realized how active the woods were at night.

While they were still lost, it seemed as though they were surrounded by friendly creatures. A swooping bat startled them, but went on its way hunting night-flying insects. At one point they heard steps behind them and whirled around with the light only to see the retreating tail of a badly frightened opossum. They were beginning to enjoy this adventure—until they saw the eyes.

Watching them silently from high off the ground was a set of bright yellow eyes! Craig and Lisa were really scared now. They spun around and began to run away as fast as they could. They had not run far, however, before they tripped on a hidden log. And as they looked back, they saw the yellow eyes widen slightly, then leap for them!

Never had they been so scared. They heard an animal land in the darkness right beside them and tried to find it with the flashlight. They finally got it in the light, and what should be there staring up at them but Toby, their lost cat. He had found them and had jumped down from a stump to join them. Were they ever glad to find out it was Toby! And what is more, Toby turned out not to be lost at all, for by following him through the woods, they soon could see the lights from the cabin. They had gone looking for Toby, and Toby had rescued them.

They looked at the welcome lights, with Mom and Dad waiting anxiously for them inside, and they were glad to be back. But before they ran laughing to the cabin, they turned and looked back. For they had learned of all that goes on in the forest at night, and of all the night creatures. So before turning back to the cabin, they quietly said goodnight.

**spring family activity**

## A Night Walk

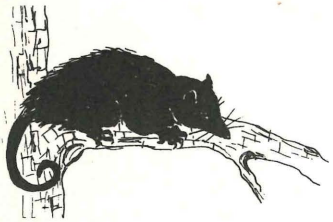
Most people are unaware of the fun and adventure of night walking. Many animals are nocturnal or active at night. In the spring, night time abounds with sounds and activity. Your whole family should pick a good night and try a walk after dark.

There are many things to keep in mind for a good night walk. First find a suitable area. Remember that rough terrain is difficult to walk over in the dark. Water attracts many animals and a location with a

pond or swamp will have the most spring activity. Explore the area by day, so that the family is familiar

with it. Then choose a proper night.

The night should be warm, still, and with moonlight if possible. On these nights animals will be most active, and can be best seen or heard. Bring a small flashlight, but use it as little as possible. Let your eyes adjust to the dark and you will be surprised how much you can make out. Do not be in a hurry. The human



eye takes close to ten minutes to adjust completely to dark conditions.

Move slowly and quietly, so as not to frighten animals. Stop often, wait and listen. Your hearing is your best sense at night. Try to separate the various different sounds and identify them. "Home in" on strange noises and try to spot the

source. Frogs, toads, insects, bats, flying squirrels, opossums, skunks, raccoons, and owls are just some of the creatures active at night. As you listen, you get to know their sounds and movements.

Most any area can be interesting: your backyard, roads bordering swamps, or maybe friends and

neighbors have nice areas for a night stroll. Unfortunately most of the public lands and state parks close at dusk. Explore your area for good locations and feel free to join us for night walks at the Science

Center. Dates and times are listed in our monthly activity sheet.

For families that develop an interest in night walks, and wish to learn more about the animals and their sounds, there are many good books and records available. These are a lot of fun, and help all ages more fully appreciate night walks. Try a night walk. Discover the world of night!

**Recommended Books**

*Night Rovers: Flying Squirrels and Their Neighbors.* Irmengarde Eberle, Doubleday, 1969

*Creatures of the Night,* Dorothy Streling, Doubleday, 1960

*Knowing the Outdoors in the Dark,* Vinson Brown, Stackpole, 1972

**Recommended Records**

*The Songs of Insects,* Cornell Laboratory of Ornithology

*Sounds of Insects,* Scholastic Records

*An Evening in Sapsucker Woods,* Cornell Laboratory of Ornithology

*Voices of The Night,* Cornell Laboratory of Ornithology

THAMES SCIENCE Center naturalist's quarterly

Non-Profit Org.
U. S. Postage
PAID
Quaker Hill, Ct.
Permit No. 9

**STAFF**
Robert O. Joslin
*Director*
Eric Leinbach
*Naturalist*
Agnes Becker
*Administrative Secretary*
Linda Becker
*Clerk Typist*
Rita Larivierre
*Volunteer Services*
Ann Morgan
*Museum Gift Shop*
Mimi DeGange
*President of Curators*

THAMES SCIENCE CENTER
GALLOWS LANE
New London, Connecticut 06320

DR. MRS RICHARD GOODWIN
CONNECTICUT COLLEGE
NEW LONDON, CONN. 06320

*ADDRESS CORRECTION REQUESTED*

CLASSES OF MEMBERSHIP

| | |
|---|---|
| Annual $7 (single adult) | Friend of the Center $50 |
| Family $12 | Organization $15 |
| Supporting $25 | Junior (under 16) $4 |

**ADVANTAGES OF MEMBERSHIP**

- **Participation in outings, bird banding, nature walks, workshops and a wide variety of activities for all ages.**
- **Subscription to the QUARTERLY and calendar of monthly activities.**
- **Reduced rates for Wildlife Film Series.**
- **A 10 percent discount on purchases of $1 or more at the Center's Gift Shop, and a special member discount on wild bird seed.**

HOURS

| MON. THRU SATURDAY | SUNDAYS | FOR INFORMATION |
|---|---|---|
| 9:00 a.m. to 5:00 p.m. | 1:00 p.m.—5:00 p.m. | CALL: 442-0391 |

closed Thanksgiving, Christmas, and New Year's